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PHYSIOLOGY.¹

FUNCTION OF THE THYROID BODY.—The experiments of Zesas (which appear in *Arch. f. Klin. Chirurg.*, Bd., LXXV) upon the effect of the removal of the spleen and thyroid body, have given interesting disclosures concerning the function of these organs. During the experiments, extirpation of the spleen was alone well tolerated, but removal of the thyroid body was followed by striking manifestations. The animals for two weeks refused nearly all food, were drowsy, walked with tottering gait, and died usually in convulsions. These effects were also manifested in animals which had survived the removal of the spleen, and from which subsequently the thyroid body was removed. In them was also observed an enormous increase in the number of white blood corpuscles. In those animals from which the thyroid body alone was removed, the increase of the white blood corpuscles was not so remarkable as it was in those in which the spleen only had been extirpated. Ablation of the thyroid body produced notable anæmia of the brain and hypertrophy of the spleen.

The lymphatic glands, especially those of the mesentery, were frequently greatly enlarged and filled with black pigment. It, therefore, appears from these experiments that the thyroid body not only has the function of acting vicariously for the spleen, but also plays an important part in regulating the supply of blood to the brain, and may, in fact, be considered as a special organ for this purpose. Zesas decides from his experiments that the removal of the thyroid body is not justifiable (surgically), and his conclusions are strongly supported by the results of this operation performed by Kocher on man for the scrofulous degeneration of the organ.—*Med. News*, Jan., 1885.

THE PLACE OF FORMATION OF UREA IN THE BODY.—MM. Grehant and Quinquaud have recently carried out on dogs a long series of experiments for the purpose of determining what are the urea-forming organs of the body. The difficulty of such work lies of course in the quantitative estimation of urea in so complex a fluid as blood. Poiseulle and Gobley concluded from their own experiments that the blood coming from an organ contained sometimes more sometimes less urea than that entering it. The method of the first named authors, though open to criticism, seems to have been followed by them with great confidence, and considerable uniformity of result. It was briefly as follows: blood was drawn directly from various parts of the venous and arterial systems, and after defibrination was thrown into several times its own volume of strong alcohol. The residue left after evaporating the alcoholic extract to dryness was treated with water; a known quantity of this solution was received in a vacuum and its urea decomposed by a solution of mercury in an excess of

¹ This department is edited by Professor HENRY SEWALL, of Ann Arbor, Mich.

nitric acid. Urea is thus decomposed into equal volumes of carbonic acid and nitrogen which were easily estimated.

It appeared from these experiments that the blood of the hepatic veins, splenic veins and the portal vein contains always more urea than the blood of the carotid artery, whence it is concluded that the abdominal viscera are the seat of continuous urea formation.

There was no notable difference in urea content between the blood coming from the head or the different members and that blood which entered those parts.

The chyle mixed with lymph drawn from the thoracic duct after death was always found richer in urea than either venous or arterial blood.

The difference between the urea content of venous and arterial blood was much more marked in animals during the digesting than in the fasting condition. This agrees with the statement of Becker & Voit, who found the excretion of urea much increased during digestion.

It may be said that these observations are difficult to reconcile with the well founded belief that the liver is the principal organ for the formation of urea in the body.—*Journ. de l'Anat. et Phys.*, 1884, p. 317.

ON THE SPECIFIC ENERGY OF THE NERVES OF THE SKIN.—The underlying facts of Joh. Müller's generalization that the nerves of special sense, as the optic, auditory, gustatory, filaments are endowed with specific energies cannot be disputed. What is meant is that any kind of stimulus whatsoever applied to the optic nerve arouses the sensation of light, every irritation of the auditory nerve gives rise to the sensation of sound, &c. The characteristic quality of these sensations depends not at all upon the peculiarity of the sensory nerve, but is determined wholly by the physiological properties of the nerve cells which receive the sensory impulse.

From the skin, as a sense organ, we receive impressions that arouse in us at least two different kinds of sensations, those of pressure and of temperature, and it is an important question whether the impulses giving rise to these different sensations proceed along identical nerves which reply in a different manner to differences in the quality of the stimulus, or whether the nerves of the skin are functionally differentiated in such a way as to call forth specific sensations without regard to the character of the stimulus. Weber believed that sensations of temperature and of pressure were modifications of the same sense, depending upon the amount of energy aroused in the sensory nerve. Physiological analogy throws doubt upon this interpretation, and recently Blix has produced evidence which supports the view that the various sensations aroused by excitement of the skin are as truly specific and due to the excitement of distinct nerves, as is the case with the other special senses. Blix used as stimulus the faradic elec-

trical current. One electrode was fixed to the skin by a broad moistened contact, while the other electrode, used in exploring the surface, ended in a fine metal point. By graduating the strength of the current, sensory irritation was confined to the region of the pointed electrode. It was found that electrical stimulation of different areas of the skin produced different sensations. At one spot the irritation excited only pain, at another a sense of cold, at a third of warmth, at a fourth, it might be, of pressure. Hence, it may be concluded, that the quality of the sensation depends not on the nature of the stimulus but upon the specific energy of the irritated nervous apparatus.

The author thinks he has shown that sensations of cold and warmth, respectively, are excited through different sets of nerves. The *cold* nerves are broadly scattered over the skin and their endings are rather deeply buried in its substance. The *warm* nerves are distributed to well-defined small areas from which alone we attain sensations of heat. A cold piece of metal, a square centimeter in section, laid upon a certain part of the forearm, produces no sensation of cold, while a pointed instrument of the same metal, at the same temperature, with a contact surface of only half a square millimeter, gives intensely cold sensations when applied to certain parts of the skin in the immediate neighborhood of the insensitive area.—*Zeitsch. f. Biologie*, Bd. xx, p. 141.

PSYCHOLOGY.

INTELLIGENCE OF A SETTER DOG (*Continued*).—It is perhaps proper for me to here refer to the peculiar fancy of the bitch Frank. Barney was always her choice and strange as it may seem—with him there was no reciprocation.

I have tested her pretty thoroughly, and I can say that she has not thus far permitted a dog not her own color to line her. And as a further proof a short time ago, being a few days before her season of heat, she left the farm seven miles distant upon which I had her kept and returned here.

There are numbers of dogs in the neighborhood where she was kept, but she returned and when a dog of different color from her own was offered she would fight desperately. Although kept on the farm for several months this was the only time she had left it.

Experimenting as I have with a number of dogs and bitches, I have noticed that some are very choice in their selection of a mate, while others are not. Some bitches will permit several to line them, even without interval, while others will not have but one serve them. Barney would not serve a wolf, *Canis latræs*, but Wad did. As a further evidence for comparison, showing the difference between the likes and dislikes of dogs, I give the following: Frank, as above stated, chooses a mate only of her own color, while Barney's greatest aim is to frolic with and if possible to line a pointer bitch in color nearly white, with a few black spots.